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GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR SITE SELECTION AND ODOR CONTROL FOR NEW AND EXPANDING LIVESTOCK PRODUCTION FACILITIES

SECTION I. - INTRODUCTION

These Generally Accepted Agricultural and Management Practices (GAAMPs) for Site Selection and Odor Control for New and Expanding Livestock Facilities are written to fulfill that purpose and to provide uniform, statewide standards and acceptable management practices based on sound science.

FARM PLANNING AND SITE DEVELOPMENT

The GAAMPs for site selection and odor control for new and expanding livestock production facilities are intended to fulfill three primary objectives:

- 1) Environmental Protection
- 2) Social Considerations (neighbor relations)
- 3) Economic Viability

When all three of these objectives are met, the ability of a farm operation to achieve agricultural sustainability is greatly increased.

Farm planning involves three broad phases: Collection and analysis (understanding the problems and opportunities); decision making; and implementation. Collection and analysis includes: determining objectives, inventorying resources and analyzing data. Decision support includes formulating alternatives, evaluating alternatives and making decisions. The final step is implementation.

Producers should utilize recognized industry and university professionals in the evaluation of the economic viability and sustainability of constructing new or expanding existing livestock production facilities. This evaluation should be comprehensive enough to consider all aspects of livestock production including economics, resources, operation, waste management and longevity.

The decision of where to site a livestock production facility can be based on several objectives including: preserving water quality, minimizing odor, working with existing land ownership constraints, future land development patterns, maximizing convenience for the operator, maintaining esthetic character, minimizing conflicts with adjacent land uses and complying with other applicable local ordinances. The environmental objectives of these GAAMPs focus specifically on water quality protection and odor control, and how environmental and management factors affect the suitability of sites for livestock production. The suitability of a particular site for a livestock production facility depends upon a number of factors, such as the number of animal units (size), the species of

sense of smell in the air they breathe and poses unique management challenges for livestock producers. While there is no scientific evidence that odorous gases that escape from livestock production facilities are toxic at the concentrations in the atmosphere experienced by neighbors, they can become an annoyance or a nuisance if manure is mismanaged or livestock production facilities are improperly sited.

Recent experiences with the National Pork Producers Council On-Farm Odor Assessment Program suggest that significant odor reduction can be achieved by improving the management of certain livestock production facilities. Improved management as well as the adoption of new technologies to control odor offer a means for reducing odor from livestock production facilities and manure storage facilities, thus broadening the area within which livestock production facilities may be appropriately sited.

Odor reduction technologies include, but are not limited to, vent biofilters, manure storage covers and composting. Each technology presents different challenges and opportunities. These should be considered during the planning process for a new or expanding animal livestock facility. Management activities for odor control are outlined in the GAAMPs for Manure Management and Utilization. An Assessment of the potential for odor generation from a livestock production facility includes using the results of the Minnesota Odor Estimator Model and identifying the technologies and management practices to be implemented to adequately control odors. Some operations exceeding 1000 animal units may need to implement further odor reduction special technologies and/or management practices.

The goal for effective odor management is to reduce the frequency, intensity, duration and offensiveness of odors that neighbors might experience. Because of the subjective nature of human responses to certain odors, recommending appropriate technology and management practices is not an exact science. Since site selection for livestock production facilities is an important factor in managing, and therefore, minimizing potential for odor impacts upon neighbors, site selection for new and expanding residential housing should consider setbacks to avoid potential land use conflicts.

Generally Accepted Agricultural and Management Practices for Site Selection and Odor Control for New and Expanding Livestock Production Facilities will help determine the suitability of sites for livestock production facilities. These GAAMPs provide a planning process that can be used to properly plan new and expanding facilities to increase the suitability of a particular site and enhance neighbor relations.

SECTION II. - DEFINITIONS

AS USED IN THESE GAAMPs:

Animal Units - Animal units are defined as listed in the U.S. Code of Federal Regulations (CFR) 40 Section 122, Appendix A (See Table 1).

Table 1. Animal Unit Equivalents

Animal Units	50	250	500	750	1,000
Animal Type ¹	Number of Animals				
Slaughter and Feeder Cattle	50	250	500	750	1,000
Mature Dairy Cattle	35	175	350	525	700
Swine ²	125	625	1,250	1,875	2,500
Sheep and Lambs	500	2,500	5,000	7,500	10,000
Horses	25	125	250	375	500
Turkeys	2,750	13,750	27,500	41,250	55,000
Laying Hens or Broilers	5,000	25,000	50,000	75,000	100,000

¹ All other animal classes, types or sizes (eg. Nursery pigs) not in this table, but defined in the Michigan Right to Farm Act or described in Michigan Commission of Agriculture Policy, are to be calculated as one thousand pounds live weight equals one animal unit.

² Weighing over 55 pounds.

SECTION III. - DETERMINING ACCEPTABLE LOCATIONS FOR LIVESTOCK PRODUCTION FACILITIES

All potential sites for new and expanding livestock production facilities can be identified by three general categories. These are:

Category 1. Sites normally acceptable for livestock production facilities.

Category 2. Sites where special technologies and/or management practices could be needed to make new and expanding livestock production facilities acceptable.

Category 3. Sites that are not acceptable for new and expanding livestock production facilities.

Category 1 Sites: Sites normally acceptable for livestock production facilities.

Category 1 sites are those sites which have been traditionally used for agricultural purposes and are in an area with a relatively low residential housing density. These sites are located where there are five or fewer non-farm residences within $\frac{1}{4}$ mile from a new livestock production facility with up to 749 animal units, and within $\frac{1}{2}$ mile from a new livestock production facility with 750 animal units or greater. New and expanding livestock production facilities should only be constructed in areas where local zoning allows for agriculture uses.

Table 3. Category 1 Site Setbacks, Verification and Notification – Expanding Operations

Total Animal Unit	Expanding Operations Non-Farm Residences within Distance	Property Line Setback¹	MDA Site Review and Verification Process	Local Unit of Government Notification²
50-249	0-7 within ¼ mile	125 ft	Upon Producer Request ³	Yes
250-499	0-7 within ¼ mile	200	Upon Producer Request ³	Yes
500-749	0-7 with ¼ mile	200 ft	Yes	Yes
750-999	0-7 with ½ mile	200 ft	Yes	Yes
1000 or more	0-7 within ½ mile	300ft	Yes	Yes

¹May be modified upon written request based upon the Minnesota Odor Estimator Model utilizing the 95% odor annoyance free requirement, proximity to existing non-farm residences, adjacent land use and management technologies implemented at the livestock production facility.

²See Section V: Notification of Local Unit of Government.

³To be afforded nuisance protection under these GAAMPs producers must conform to all requirements of the GAAMPs but are not required to complete the site review and verification process if less than 500 animal units.

Category 2 Sites: Sites where special technologies and/or management practices may be needed to make new and expanding livestock production facilities acceptable.

Category 2 sites are those where site-specific factors may limit the environmental, social or economic acceptability of the site for livestock production facilities and where structural, vegetative, technological and management measures may be necessary to address those limiting factors. These measures should be incorporated into a Site Plan and a Manure Management System Plan, both as defined in Section IV, which are required for all new and expanding livestock production facilities seeking verification. New and expanding livestock production facilities should only be constructed in areas where local zoning allows for agriculture uses.

Tables 4 and 5 show how Category 2 sites are defined and lists setbacks, verification and notification requirements. As an example, a proposed site for an expanding livestock production facility (Table 5) with 500 animal units and between eight and 20 residences within ¼ mile of the facility, would have a setback of 200 feet from the owner's property line, and would be required to have a site verification request approved by MDA.

Table 5. Category 2 Site Setbacks, Verification and Notification – Expanding Operations

Total Animal Units	For Expanding Operations Non-Farm Residences within Distance	Property Line Setback¹	MDA Site Review and Verification Process	Local Unit of Government Notification²
50-249	8- 20 within 1/4 mile	125 ft	Upon Producer Request ³	Yes
250-499	8- 20 within 1/4 mile	200ft	Yes	Yes
500-749	8- 20 within 1/4 mile	200 ft	Yes	Yes
750-999	8- 20 within 1/2 mile	250 ft	Yes	Yes
1000 or more	8- 20 within 1/2 mile	300 ft	Yes	Yes

¹May be modified upon written request based upon the Minnesota Odor Estimator Model, utilizing the 95% odor annoyance free requirement, proximity to existing non-farm residences, adjacent land use and management technologies implemented at the livestock production facility.

²See Section V: Notification of Local Unit of Government.

³To be afforded nuisance protection under the Right to Farm Act, producers must conform to all applicable GAAMPs but are not required to complete the site review and verification process if less than 250 animal units.

Category 3 Sites: Sites not appropriate for new and expanding livestock production facilities.

New and expanding livestock production facilities should not be constructed in areas where local zoning does not allow for agriculture uses. Any proposed site with more than the maximum number of non-farm residences specified in Table 4 for a new operation and Table 5 for an expanding operation is a Category 3 site. New and expanding livestock production facilities are inappropriate for that site. Additionally, the following categories are considered unacceptable for construction of new and expanding livestock production facilities.

1. Wetlands - New and expanding livestock production facilities shall not be constructed within a wetland as defined under MCL 324.30301 (NREPA, PA 451, as amended).
2. Floodplain - New and expanding livestock production facilities and manure storage facilities shall not be constructed in an area where the facilities would be inundated with surface water in a 25 year flood event.

The following categories are also considered unacceptable for construction of new livestock production facilities. However, expanding livestock production facilities may be acceptable if appropriate odor reduction and control technologies and management

SECTION IV. - DEVELOPING A SITE PLAN AND A MANURE MANAGEMENT SYSTEM PLAN

Site Plan

A Site Plan is a comprehensive layout for a livestock production facility, and includes:

- A site map including the following features (to scale):
 - ~ Property lines, easements, rights-of-way, and any deed restrictions.
 - ~ Public utilities, overhead power lines, cable, pipelines, and legally established public drains.
 - ~ Positions of buildings, wells, septic systems, culverts, drains and waterways, walls, fences, roads, and other paved areas.
 - ~ Location, type and size of existing utilities.
 - ~ Location of wetlands, streams and other bodies of water.
- Existing land uses for contiguous land.
- Names and addresses of adjacent property owners.
- Basis of livestock production facility design.
- Structures should be designed and constructed by competent individuals or companies utilizing generally accepted standards, guidelines and specifications. (e.g. NRCS, Midwest Plan Service)
- A soils map of the area where all livestock production facilities are located.
- Location and distance to the non-farm residences within one-half mile.
- Location and distance to the nearest residentially zoned area.
- Topographic map of site and surrounding area.
- Property deed restrictions.

Manure Management System Plan

The Manure Management System Plan describes the system of structural, vegetative and management practices that the owner/operator has chosen to implement on the site for all proposed new and existing facilities. Items to address in the manure management system plan are described in the GAAMPs for Manure Management and Utilization. The manure management system plan for a site verification request will include these additional components:

- Sufficient land, or have access to sufficient land for the proper collection, storage, treatment, transfer, utilization, and treatment if applicable, of the manure and other by-products generated.
- Provisions for the collection and utilization of polluted runoff and leachate from manure and feed.
- Planning and installation of manure management system components to ensure proper function of the entire system.

MDA will conduct construction site inspections, as needed to determine whether the structures are being built according to the accepted plans. The owner should notify MDA one month prior to beginning the installation of the manure storage facility.

Comprehensive Nutrient Management Plan

A Comprehensive Nutrient Management Plan (CNMP) is the next step beyond a Manure Management System Plan (MMSP). All efforts put towards an MMSP may be utilized in the development of a CNMP as it is founded on the same eight components as the MMSP, with a few significant differences. Some of the "optional" sub-components of an MMSP are required in a CNMP. Examples include veterinary waste disposal and mortality management. In addition, the "production" component is more detailed regarding management of rainwater, plate cooler water, and milk house wastewater. More thorough calculations are also needed to document animal manure production.

Another difference between an MMSP and a CNMP is in the "Utilization" component. With an MMSP, nutrients need to be applied at agronomic rates and according to realistic yield goals. However, with a CNMP, a more extensive analysis of field application is conducted. This analysis includes the use of the Manure Application Risk Index (MARI) to determine suitability for winter spreading, and the Revised Universal Soil Loss Equation (RUSLE) to determine potential nutrient loss from erosive forces, and other farm specific conservation practices. More detail regarding the timing and method of manure applications and long term cropping system/plans must be documented in a CNMP.

Additional information on potential adverse impacts to surface and groundwater and preventative measures to protect these resources are identified in a CNMP. Although the CNMP provides the framework for consistent documentation of a number of practices, the CNMP is a planning tool not a documentation package.

Odor management is included in both the MMSP and CNMP.

Implementation of an MMSP is ongoing. A CNMP implementation schedule typically includes long-term changes. These often include installation of new structures and/or changes in farm management practices that are usually phased in over a longer period of time. Such changes are outlined in the CNMP implementation schedule, providing a reference to the producer for planning to implement changes within their own constraints. As is described above, a producer with a sound MMSP is well on their way to developing a CNMP. Time spent developing and using a MMSP will help position the producer to ultimately develop a CNMP on their farm, if they decide to proceed to that level or when they are required to do so.

WHO NEEDS A CNMP?

1. All farms with 1000 animal units (AU) or more must develop a CNMP.
2. Any farm with less than 1000 AU that has had a Department of Environmental Quality (DEQ) documented discharge to surface water may be required to develop a CNMP.

production facility siting request. At the request of the producer, a preliminary site visit could be conducted prior to submission of the complete siting request package.

Review and Verification:

MDA will review completed siting requests upon receipt. The review will verify the following: siting request information submitted; conformance with this GAAMP; a complete Site Plan and Manure Management System Plan, including the assessment of odor potential and a plan to minimize excessive odors; project timetable; local unit of government input; and recognized industry, university, or agency professional involvement. If deficiencies in the siting request are identified, MDA will communicate those to the responsible party for further modification.

Determination of Conformance with this GAAMP:

MDA will determine if the siting request is in conformance with the GAAMP for Site Selection and Odor Control for New and Expanding Livestock Production Facilities. This determination will be conveyed to the responsible party on MDA letterhead and will remain valid for three years. If the siting request is found not to be in conformance with this GAAMP, MDA will provide justification for that decision to the responsible party. MDA will conduct construction site inspections, as needed, to determine whether the structures are being built according to the accepted plans. The completed project must be reviewed by MDA to assure conformance with this GAAMP. The facility must be completed in conformance with the verification request that has been approved by MDA.

Notification to Local Unit of Government:

MDA will notify the local units of government within one mile of the center of the facility of all proposed livestock production facility siting requests and of all determinations made regarding the status of a siting request for siting a new or expanding livestock production facility.

Review Process:

If either the owner of the proposed livestock production facility, or any surrounding neighbor within one mile of the proposed facility, or the local unit of government disagrees with the results of the review and verification process, they may request MDA's decision be reviewed by the Michigan Commission of Agriculture within 60 days of the date the decision was issued.

The request shall be in writing and include supporting documentation. MDA will review the supporting documentation and then will consult with at least three recognized professionals in the siting and management of livestock production facilities and odor control practices as listed below to further evaluate the proposed siting request. MDA will notify the professionals of the request. The professionals shall review and report a recommendation on the proposed siting request to the Commission of Agriculture within 60 days of receipt of the notification form to MDA. An extension may be granted by the Commission of Agriculture. The final decision rests with the Michigan Commission of Agriculture. This review process is created solely for the purpose of this specific GAAMP, and the Administrative Procedures Act does not apply.

SECTION VI. REFERENCES

The Generally Accepted Agricultural and Management Practices for Manure Management and Utilization.

Jacobsen, Larry and Huiqing Guo. An Odor Setback Estimator for Feedlots (OSEFF). BAE Department. University of Minnesota. (Minnesota Odor Estimator Model)

Jacobson, Larry, Huiqing Guo, David Schmidt, Richard Nicolai, Jun Zhu and Kevin Janni. Worksheet for the Odor Rating System to Estimate Setback Distances for Animal Production Sites. Version 1.0. BAE Department. University of Minnesota. (Minnesota Odor Estimator Model)

The Michigan Natural Resources and Environmental Protection Act (PA 451 of 1994).

Michigan Right to Farm Act, PA 93 of 1981, as amended.

National Pork Producers Council On-Farm Odor Assessment Program.

United States Department of Agriculture, Natural Resources Conservation Service, Field Office Technical Guide, East Lansing, MI.

United States Department of Agriculture, Natural Resources Conservation Service, Agricultural Waste Management Field Handbook, Washington DC, 1992.

United States Federal Clean Water Act [Code of Federal Regulations 40 (CFR40)]

